NAME: DATE:

p1020: graded take-home open-note practice exam (version 217)

Question 1

Let f represent a function. If $f[50] = 8$, then there exists a knowable solution to the equation below.

$$y = 2 \cdot \left(f\left[\frac{x}{7} + 46 \right] + 3 \right)$$

Find the solution.

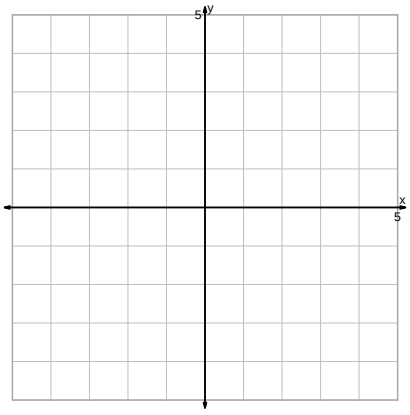
$x =$

$y =$

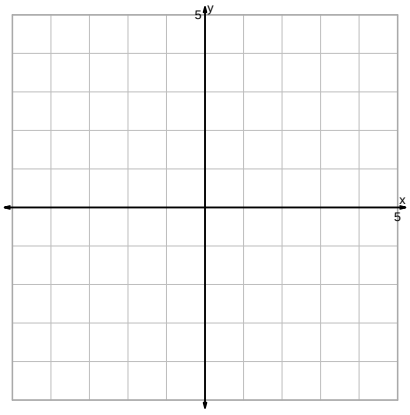
Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

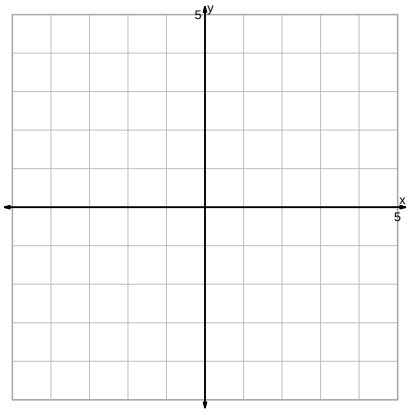
$y = 2^{-x}$



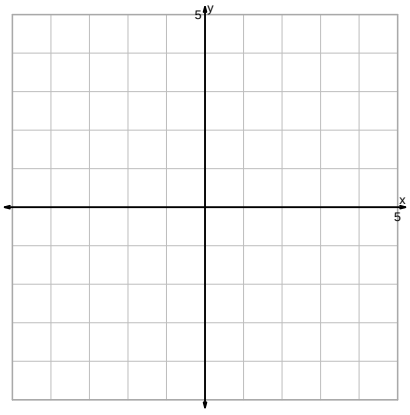
$y = x^2 - 2$



$y = 2 \cdot \sqrt{x}$

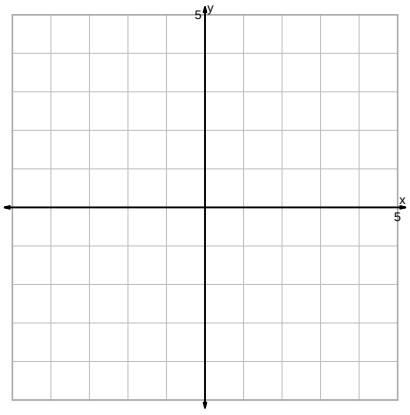


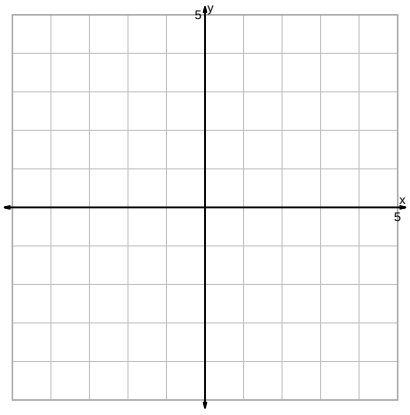
$y = \frac{2^x}{2}$



Question 2 continued...

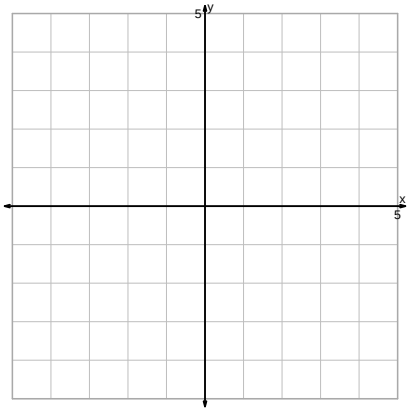
$y = \sqrt[3]{x-2}$

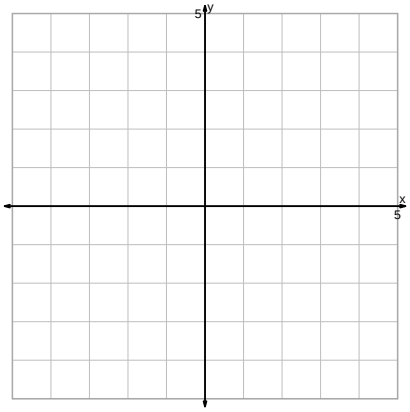




$y = \sqrt[3]{\frac{x}{2}}$

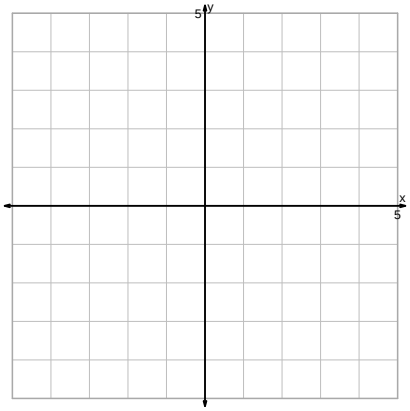
$y = x^2 + 2$

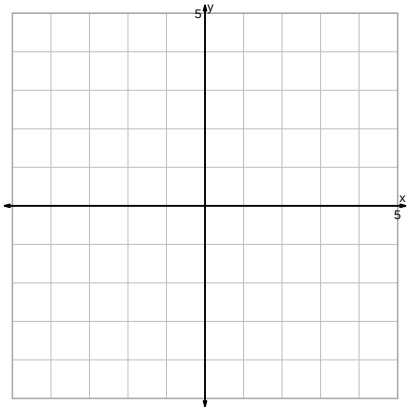




$y = \log_2(x+2)$

$y = -\sqrt{x}$

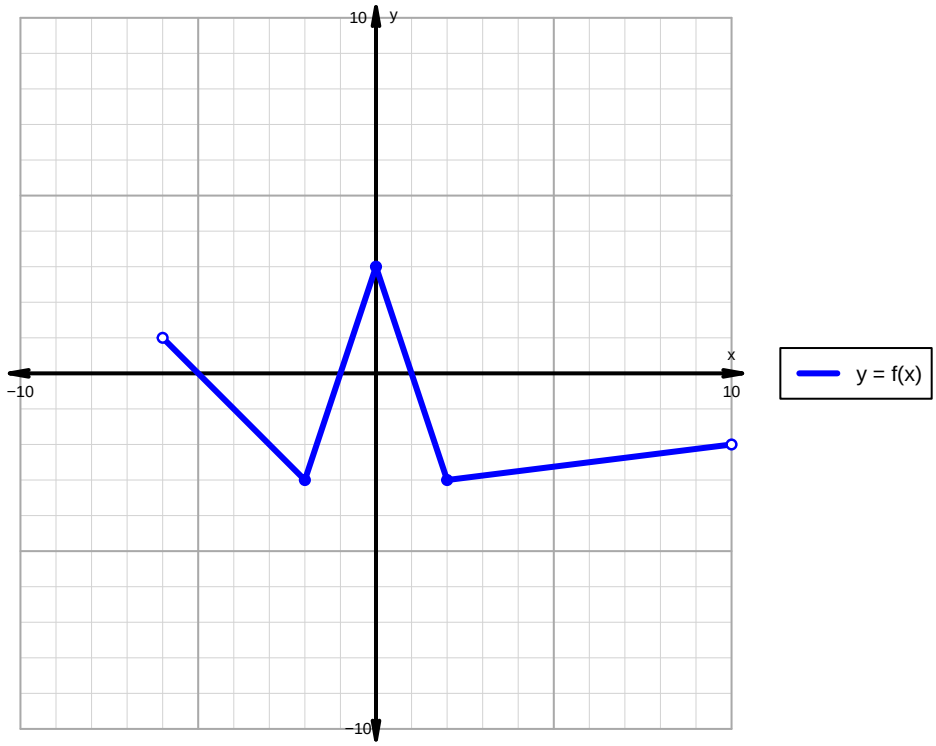




$y = (2x)^3$

Question 3

A function is graphed below.



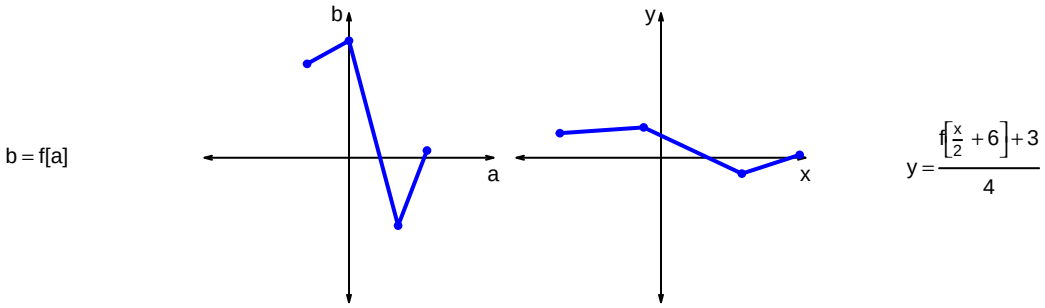
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{2}+6\right]+3}{4}$ are represented below in a table and on graphs.

a	b	x	y
-29	65	-70	17
0	81	-12	21
34	-47	56	-11
54	5	96	2



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{2}+6\right]+3}{4}$?

Question 5

A parent square-root function is transformed in the following ways:

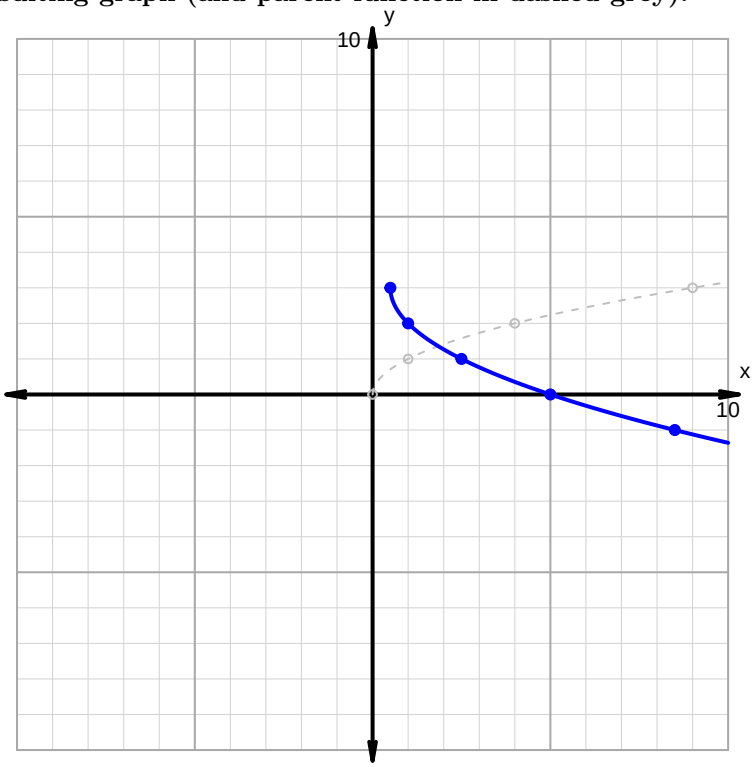
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate up by distance 3.

Resulting graph (and parent function in dashed grey):

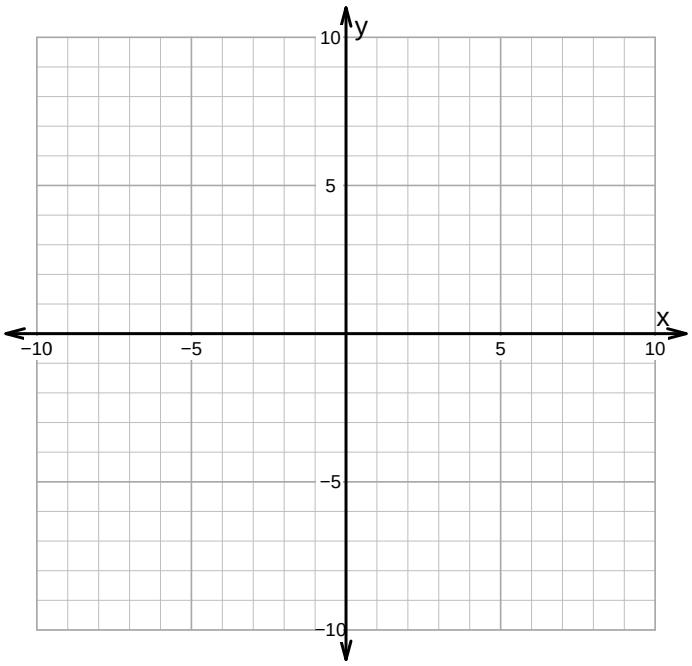


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -3 \cdot |x + 2| + 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	